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CERAMIC ABSTRACTS

1982

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1901	Old Point Comfort	C. F. Binns (art)	Ernest Mayer
1902	Cleveland, Ohio	Ernest Mayer (W)	F. W. Walker, Sr.
1903	Boston, Mass	E. C. Stover (W)	Heinrich Ries
1904	Cincinnati, Ohio	F. W. Walker, Sr. (W)	A. V. Bleining
1905	Birmingham, Ala.	W. D. Gates (terra cotta)	Ellis Lovejoy
1906	Philadelphia, Pa.	W. D. Richardson (S)	Samuel Geijsbeek
1907	St. Louis, Mo.	S. G. Burt (art)	R. C. Purdy
1908	Columbus, Ohio	A. V. Bleining (W)	Charles Weelans
1909	Rochester, N. Y.	R. C. Purdy (gen)	A. S. Watts
1910	Pittsburgh, Pa.	Heinrich Ries (gen)	R. R. Hice
1911	Trenton, N. J.	Charles Weelans (W)	L. E. Barringer
1912	Chicago, Ill.	A. S. Watts (gen)	C. W. Parmelee
1913	Washington, D. C.	Ellis Lovejoy (S)	A. F. Hottinger
1914	Wheeling, W. Va.	C. W. Parmelee (gen)	D. T. Farnham
1915	Detroit, Mich.	R. R. Hice (S)	R. T. Stull
1916	Cleveland, Ohio	L. E. Barringer (W)	F. K. Pence
1917	New York, N. Y.	G. H. Brown (gen)	C. E. Jackson
1918	Indianapolis, Ind.	H. F. Staley (C)	A. F. Greaves-Walker
1919	Pittsburgh, Pa.	R. T. Stull (S)	R. H. Minton
1920	Philadelphia, Pa.	R. H. Minton (W)	E. T. Montgomery
1921	Columbus, Ohio	F. K. Pence (W)	F. B. Ortman
1922	St. Louis, Mo.	F. H. Riddle (W)	E. Ward Tillotson
1923	Pittsburgh, Pa.	A. F. Greaves-Walker (R)	R. D. Landrum
1924	Atlantic City, N. J.	R. D. Landrum (C)	R. M. Howe and August Staudt
1925	Columbus, Ohio	E. Ward Tillotson (G)	F. H. Rhead
1926	Atlanta, Ga.	R. L. Clare (terra cotta)	B. Mifflin Hood
1927	Detroit, Mich.	B. Mifflin Hoof (S)	M. C. Booz
1928	Atlantic City, N. J.	M. C. Booz (R)	R. R. Danielson
1929	Chicago, Ill.	G. A. Bole (gen)	F. A. Harvey
1930	Toronto, Canada	Edward Orton, Jr. (gen)	P. E. Cox
1931	Cleveland, Ohio	E. V. Eskesen (terra cotta)	Alexander Silverman
1932	Washington, D. C.	E. P. Poste (C)	W. Keith McAfee
1933	Pittsburgh, Pa.	J. C. Hostetter (G)	L. J. Trostel, Sr.
1934	Cincinnati, Ohio	W. Keith McAfee (W)	J. M. McKinley
1935	Buffalo, N. Y.	J. M. McKinley (R)	F. C. Flint
1936	Columbus, Ohio	F. C. Flint (G)	R. B. Sosman
1937	New York, N. Y.	R. B. Sosman (R)	V. V. Kelsey
1938	New Orleans, La.	V. V. Kelsey (M)	A. I. Andrews
1939	Chicago, Ill.	A. I. Andrews (C)	J. L. Carruthers
1940	Toronto, Canada	J. L. Carruthers (terra cotta)	J. T. Littleton
1941	Baltimore, Md.	J. T. Littleton (G)	P. D. Helser
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1943	Pittsburgh, Pa.	C. E. Bales (R)	E. H. Fritz
1944	Pittsburgh, Pa.	E. H. Fritz (W)	C. Forrest Tefft
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1946	Buffalo, N. Y.	J. E. Hansen (C)	J. D. Sullivan
1947	Atlantic City, N. J.	J. D. Sullivan (R)	J. W. Whittemore
1948	Chicago, Ill.	J. W. Whittemore (gen)	H. M. Kraner
1949	Cincinnati, Ohio	H. M. Kraner (R)	Howells Frechette, A. L. Bennett, Robert Twells
1950	New York, N. Y.	J. W. Hepplewhite (W)	Aaron K. Lyle, Hewitt Wilson, T. A. Klinefelter
1951	Chicago, Ill.	Howard R. Lillie (G)	Probert W. Dager, Ray W. Pafford, Arthur A. Wells
1952	Pittsburgh, Pa.	W. Edward Cramer (W)	Victor C. Swicker, Harry H. Holscher, H. B. DuBois
1953	New York, N. Y.	R. R. Danielson (C)	J. E. Eagle, Joseph A. Pask, S. M. Swain
1954	Chicago, Ill.	Ray W. Pafford (S)	William O. Brandt, John F. McMahon, Roland R. Roup
1955	Cincinnati, Ohio	Robert Twells (W)	R. S. Bradley, John H. Isenhour, Kenneth C. Lyon
1956	New York, N. Y.	Karl Schwartzwalder (W)	Oscar G. Burch, Louis Navias, C. W. Planje
1957	Dallas, Texas	John F. McMahon (gen)	Wayne A. Deringer, Clarence H. Hahner, J. S. Nordyke
1958	Pittsburgh, Pa.	R. S. Bradley (R)	W. W. Coates, Harry E. Davis, Herbert Insley
1959	Chicago, Ill.	Oscar G. Burch (G)	J. J. Canfield, John H. Koenig, James I. Mueller
1960	Philadelphia, Pa.	George H. Spencer-Strong (C)	Eugene C. Clemens, Frederick H. Norton, Andrew Pereny
1961	Toronto, Canada	John S. Nordyke (M)	V. J. Duplin, Leonard G. Ghering, Elroy E. Howe
1962	New York, N. Y.	John H. Koenig (E)	W. W. Gaskins, Frank Jansma, E. F. Osborn
1963	Pittsburgh, Pa.	Paul V. Johnson (S)	H. P. Bonebrake, Clair R. Oberst, James S. Owens
1964	Chicago, Ill.	Elbert F. Osborn (B)	R. R. Rhodes, G. J. Middleton, W. J. Smothers
1965	Philadelphia, Pa.	Howard P. Bonebrake (M)	R. E. Birch, L. S. O'Bannon, A. E. R. Westman
1966	Washington, D. C.	George J. Bair (G)	Arthur J. Blume, Edward C. Henry, Harry W. Thiemecke
1967	New York, N. Y.	James S. Owens (W)	Howard F. McMurdie, Alfred W. Allen, J. Earl Frazier
1968	Chicago, Ill.	Loran S. O'Bannon (C)	Clarence L. Babcock, Lane Mitchell, Theodore J. M. Planje
1969	Washington, D. C.	Arthur J. Blume (S)	William W. Coffeen, Scroop W. Enloe, Jr., J. O. Everhart
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1971	Chicago, Ill.	William J. Smothers (R)	James R. Johnson, Robert S. Sinclair, Stephen D. Stoddard
1972	Washington, D. C.	T. J. Planje (R)	Joseph E. Burke, Robert S. Du Fresno, William R. Prindle
1973	Cincinnati, Ohio	James R. Johnson (B)	Lyle A. Holmes, Walter W. Perkins, Merton L. Van Dreser
1974	Chicago, Ill.	Joseph E. Burke (B)	William J. Knapp, Malcolm G. McLaren, Haydn H. Murray, Basil G. Staples, Franklin M. Townsend
1975	Washington, D. C.	Ralston Russell, Jr. (W)	Sherwood E. Patek, John A. Stewart, O. J. Whittemore, Jr.
1976	Cincinnati, Ohio	Stephen D. Stoddard (N)	Gordon L. Barna, Seymour L. Blum, Winston Duckworth
1977	Chicago, Ill.	Lyle A. Holmes (M)	William C. Mohr, Guy E. Rindone, Ronald R. Roup
1978	Detroit, Mich.	John B. Wachtman, Jr. (B)	A. Josephine Gitter, Milan Vukovich, James C. Waldal
1979	Cincinnati, Ohio	Malcolm G. McLaren (W)	J. Lambert Bates, Robert H. Insley, William R. Jacoby
1980	Chicago, Ill.	William R. Prindle (G)	Stephen C. Carniglia, Gilbert Goodman, Charles R. Kurkjian
1981	Washington, D. C.	James I. Mueller (C)	Geoffrey J. C. Frohnsdorff, William Payne, Edwin Ruh, and Murray A. Schwartz
1982	Cincinnati, Ohio	Robert J. Beals (W)	Alan D. Miller, Joseph L. Pentecost, Richard M. Spriggs

CAVITATION IN MgO DOPED ALUMINA

VACUUM HOT-PRESSED FULLY DENSE SAMPLES OF LINDE α -ALUMINA, DOPED WITH MgO BELOW THE SOLUBILITY LIMIT, DEDENSIFIED SUBSTANTIALLY ON ANNEALING IN AIR AT 1630°C (GRAPH 1), THROUGH THE FORMATION OF GRAIN-BOUNDARY CAVITIES (FIGS. 1 AND 2). THE PHENOMENA WAS SUPPRESSED BY ANNEALING IN A REDUCING ATMOSPHERE (GRAPH 1). THE MECHANISM OF CAVITATION HAS BEEN IDENTIFIED AS THE INWARD DIFFUSION OF OXYGEN DOWN GRAIN BOUNDARIES TO REACT WITH TRACE AMOUNTS OF CARBON (SHOWN TO BE PRESENT IN THE STARTING POWDER BY CHEMICAL ANALYSIS) SEGREGATED AT THE BOUNDARIES, TO GIVE CO/CO₂ GAS AT HIGH PRESSURES. INCREASING MgO CONTENT PROMOTES DEDENSIFICATION.

ALL STARTING SAMPLES WERE FABRICATED BY HOT-PRESSING 7g OF POWDER IN A BN-COATED GRAPHITE DIE AT 1630°C, 35 MPa APPLIED PRESSURE, 100 μ m Hg VACUUM.

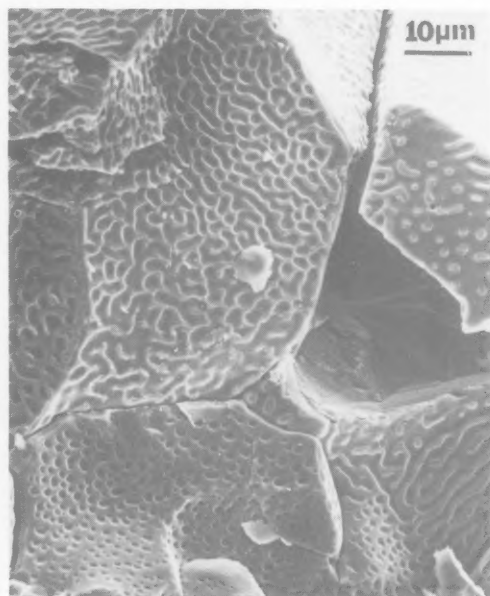


FIG. 2 - GRAIN-BOUNDARY CAVITIES FORMED ON ABNORMAL GRAINS FOUND IN THE CENTER OF THE SAME DISC AS IN FIG. 1 (SEM FRACTURE SURFACE)

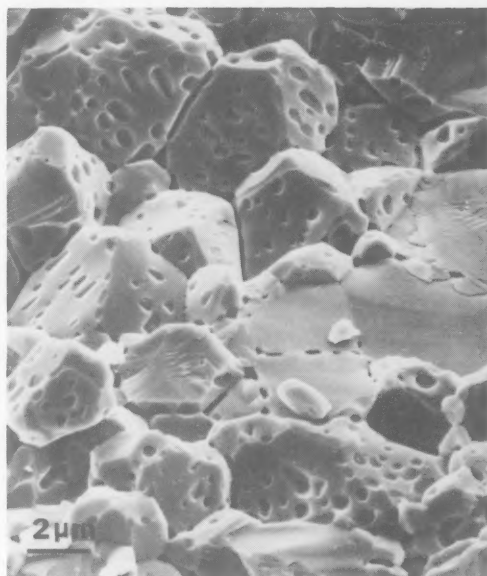
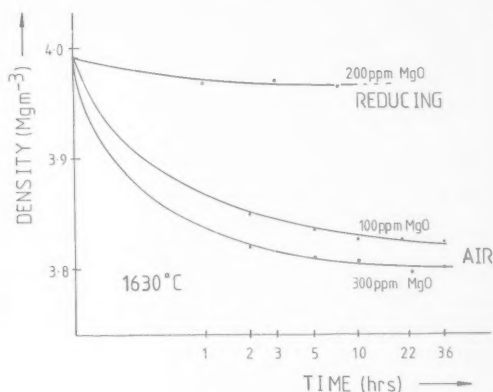


FIG. 1 - GRAIN-BOUNDARY CAVITIES IN AN AREA OF NORMAL GRAIN SIZE POPULATION. HOT-PRESSED DISC (200 ppm MgO) ANNEALED AT 1630°C IN AIR FOR 10 HRS. (SEM FRACTURE SURFACE)



GRAPH 1 - DENSITY VS. LOG TIME FOR DOPED ALUMINA SAMPLES ANNEALED AT 1630°C IN AIR AND REDUCING ATMOSPHERES.

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